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October 19, 2010

BY HAND

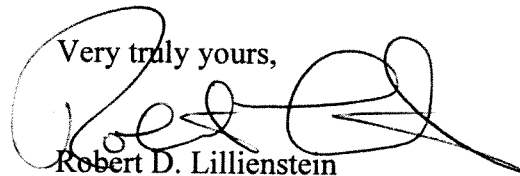
Krishnan Chittur, Esq.
Chittur & Associates PC
286 Madison Avenue, Suite 1100
New York, NY 10017

Re: **Serin v. Northern Leasing Systems, Inc.**

Dear Mr. Chittur:

Attached please find the report of Defendant's expert, Christopher Erath, as well as his CV. Mr. Erath will be giving testimony regarding Plaintiffs' claimed damages and the opinions expressed by Plaintiff's expert, Stan Smith. NERA, where Mr. Erath is employed, is being compensated at the rate of \$475 per hour for his work in this case.

Very truly yours,



Robert D. Lillienstein

RDL/js

Encs.

NERA

Economic Consulting

Christopher Erath

Senior Vice President

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CHRISTOPHER ERATH

SENIOR VICE PRESIDENT

Dr. Erath received A.B. degrees in Economics and Mathematics from Bowdoin College and a Master's and Ph.D. in Economics from the University of Wisconsin.

Dr. Erath's primary area of interest is labor economics. He has served as an expert witness in numerous matters involving damages in employment discrimination and wage and hour claims and has also prepared extensive studies of statistical liability in employment proceedings and opined on class certification issues. In addition, he has directed research into various antitrust issues such as damages from patent infringement and breach of contract as well as for use in regulatory prudence hearings. Dr. Erath instructed graduate courses in econometrics at the University of Wisconsin.



Marsh & McLennan Companies

Christopher Erath

Education

University of Wisconsin

Ph.D., Economics, 1997

Major Fields: Labor Economics, Econometrics

M.A., Economics, 1992

Bowdoin College

A.B., Economics and Mathematics, 1987

Professional Experience

NERA Economic Consulting

2004-Present Senior Vice President

1999-2003 Vice President

1997-1999 Senior Consultant

1995-1996 Senior Analyst

1987-1995 Various research positions

University of Wisconsin

1991-1995 Teaching Assistant

Publications and Presentations

“Statistics and RIFs: What You Don’t Know Can Hurt You”, New York City Bar Association, 2009

“The Quick and Easy Way is Rarely the Right Way,” Practising Law Institute, 2005, in Litigating Employment Discrimination and Sexual Harassment Claims.

“Friend or Foe: Recent Changes from the OFCCP and the Supreme Court,” Employment Law Strategist, June 2005

“A Nightmare and a Good Dream: A Parable about the Value of Sound Statistical Analysis” (with Daniel Garcia), in HR Advisor, March/April 2003.

NERA Labor Luncheon, “Disraeli Would Have Loved Employment Discrimination Cases,” Chicago, IL, November 2000, and New York, NY, December 2000.

Testimony

Armstrong et al v Metropolitan Transit Authority et al, deposition testimony concerning economic losses to group of plaintiffs resulting from alleged race discrimination

Gutierrez et al. v Johnson & Johnson, deposition testimony concerning statistical allegations of race discrimination in pay and promotion

Robert Bigini v. Matrix Information Consulting, deposition testimony regarding losses from alleged wrongful termination

CentiMark, Inc. v. Tecta America, deposition testimony concerning loss from alleged breach of contract from hiring employees subject to a non-compete clause

United States et al v. City of New York, deposition testimony concerning economic losses arising from failure to hire and delayed hiring in race discrimination matter

Bagwell v. Peachtree Doors, deposition testimony concerning statistical evidence supporting claims of race discrimination arising from a RIF

Burgarella v. NYPD et al, trial testimony concerning economic losses

Boucaud et al v. City of New York, deposition testimony concerning economic losses in FLSA matter

Miller v. Horizon Blue Cross/Blue Shield of New Jersey, deposition testimony concerning damages from alleged wrongful termination

Gupta v. DPC et al, trial and deposition testimony concerning damages from alleged wrongful termination

Keenan Scott et al v. City of New York and the New York City Police Department, deposition testimony concerning plaintiffs' claims of underpayments in an FLSA matter

Merton Simpson et al v. New York State Department of Civil Service and George Sinnott, deposition testimony concerning economic losses in class action race discrimination matter

Peter Rost v. Pfizer, Inc. et al, deposition testimony concerning economic losses in whistle-blowing matter.

Speight v. Capmark, deposition testimony concerning economic losses in race discrimination matter

Zeil Rosenberg v. Becton, Dickinson & Company, deposition and trial testimony concerning economic losses in whistle-blowing matter

Christopher Erath

Janice Walker v. NECA et al, trial testimony concerning economic losses in race discrimination matter

EEOC v. Temple-Inland, Inc., deposition testimony concerning economic loss for four plaintiffs in age discrimination matter

Kenneth Thomas v. iStar Financial, Inc., deposition and trial testimony concerning economic losses in race discrimination matter.

Louis Anemone v. Metropolitan Transit Authority et al, deposition testimony concerning economic losses in wrongful termination matter.

Theresa Metty v. Motorola, Inc., deposition testimony concerning economic losses in wrongful termination case.

Timothy R. Booker v. Robert Half International, Inc., arbitration testimony before AAA arbitrator in Washington, D.C. concerning claimant's economic losses.

Robert Wright, et al., v. Henry Stern, et al. 01 Civ 4437 (DC) (MHD), United States District Court, Southern District of NY. Deposition testimony concerning statistical evaluation of plaintiffs' claims of race discrimination at the Parks Department of the City of New York.

United Federation of Teachers v. The City of New York, PERB Case No. M2004-253, 268-279. Arbitration testimony in a wage dispute.

Allstate Insurance Company v. Arthur M. Seigel, M.D., Arthur M. Seigel M.D., P.C., and Ellen Seigel, United States District Court of Connecticut, case number 303 CV 0577 MRK. Deposition testimony regarding statistical analysis of damages in fraud matter.

Vogt, et al. v. Greenmarine Holdings LLC, et al. 02 CV 2059 (GEL). Deposition testimony concerning alleged failure to give WARN Act notice.

Patrolmen's Benevolent Association of the City of New York Inc., v. The City of New York, Inc., PERB Case No: IA 2004-008, M 2004-024. Arbitration testimony in a wage dispute.

Carol Rutlen v. PricewaterhouseCoopers LLP, AAA Case No. 13 116 02744 02. Arbitration testimony regarding economic loss from alleged forced discharge.

EEOC v. Carl Buddig & Company, United States District Court of Illinois. Deposition testimony regarding statistical analysis of hiring discrimination claim.

Sujata Nichani v. Otis Elevator Company, United States District Court of Connecticut. Deposition testimony concerning economic loss in alleged gender discrimination matter.

NATIONAL ECONOMIC
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My name is Christopher Erath, and I am a Senior Vice President at National Economic Research Associates (NERA) in Boston, Massachusetts. NERA is a consulting firm specializing in microeconomic analysis. I received a Ph. D. in economics from the University of Wisconsin where my fields of interest included labor economics, econometrics, and industrial organization. My curriculum vitae is attached.¹

I have been asked to review the reports by Stan Smith purporting to estimate the value of "certain losses" to five plaintiffs – Gordon Redner, Melinda Serin, Judson Russ, Long Lim, and Thomas Smith – allegedly arising from contracts entered into with Northern Leasing Systems, the defendant in these matters.² Each of these individuals claims that a contract between Northern Leasing Systems and themselves was fraudulent and Dr. Smith attempts to value sundry losses which he argues arose from these contracts and Northern Leasing Systems' attempts to enforce them. For the purposes of this report, I assume that plaintiffs will prevail on their claims of liability, but note that no losses would be due should they not.

Dr. Smith asserts five categories of damages, some applying to all five plaintiffs and others to a subset. These are:

- Payments to Northern Leasing Systems and travel expenses
- Value of time spent contesting the contracts
- Loss of credit expectancy
- Loss of business profits
- Reduced value of life

¹ NERA is being compensated at \$475 per hour for my work in this case, my customary hourly rate.

² The complaint lists a sixth plaintiff for whom Dr. Smith has provided no estimate of loss, and I therefore confine my comments to the five listed above.

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Defendant's counsel has asked me to address the last four of these claims, and I do so in the remainder of this report.

I. VALUE OF TIME SPENT

Dr. Smith includes an amount for time spent contesting the contracts for each of the plaintiffs. These amounts vary dramatically – 50 hours for Mr. Redner, 150 hours for Ms. Serin, and 240 hours for Mr. Lim. In no case does Dr. Smith present any basis for these figures other than what he was told by the individual plaintiff, and it appears he simply accepted each plaintiff's representation of time expended.³ These amounts of time are then converted to dollars by multiplying them by a wage rate unique to each plaintiff, none of which are drawn from wage rates commanded by the plaintiffs themselves. Rather, Dr. Smith relies upon government survey data to find a wage rate for "Office Clerks and Payroll and Timekeeping Clerks" in each plaintiff's geographic area and uses such wage figures to create a loss of value of time spent.

I do not believe this methodology can provide a meaningful estimate of the value of time spent. As a first matter, Dr. Smith should be comparing the estimates of time spent, if accurate, to the amount of time which would have been spent had Northern Leasing Systems not committed the violations of which it stands accused. That is, if Mr. Redner spent 50 hours debating the contractual charges with Northern Leasing but would have had to spend 30 hours to prove the alleged fraud, he could only be entitled to compensation for the 20 hour difference. Second, Dr. Smith provides no justification for his use of wages for Office Clerks as a value for time as opposed to any other job, nor does he explain why the wage rate for any job is an appropriate measure for value of time spent or assert that any plaintiff missed time at work to contest a Northern Leasing Systems contract. While many economists would agree that a loss of time alone does have value, there is no standard means for valuing that time, and any loss would surely be a function of a person's individual circumstances. For instance, loss of an hour of leisure time to someone who is retired and enjoys copious leisure time would be worth less than an hour of leisure time to someone for whom leisure is a scarce quantity. Dr. Smith's unjustified use of an Office Clerk wage rate is simple speculation.

I do not believe that Dr. Smith has presented any viable basis for this component of loss.

³ Per Dr. Smith's report, Mr. Lim spent "200-250" hours but Dr. Smith uses 240. He does not state why.

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II. LOSS OF CREDIT EXPECTANCY

The second component of Dr. Smith's loss is a claim of loss of credit expectancy. For Mr. Redner and Ms. Serin, Dr. Smith's argument is purely theoretical and represents speculation; he has no allegation that either plaintiff attempted or desired to borrow money or paid interest rates in excess of what they might have paid in the absence of the conduct alleged in this case. Dr. Smith's proposed justification for providing an estimate of loss for a category where none exists is to state that credit is equivalent to a net for a trapeze artist and that the value has nothing to do with whether credit was sought, considered, or used. Dr. Smith has no basis for this novel claim, and from his report it would appear that he would concur that these plaintiffs sustained no actual loss related to credit expectancy.

To concoct a value for this claim Dr. Smith sets forth a dollar value for each plaintiff – \$10,000 for Mr. Redner and \$150,000 for Ms. Serin – and then finds the additional interest which would be required if the plaintiff borrowed this amount at 25 percent as opposed to 12 percent. He presents no justification for the individual dollar amounts or his two cited interest rates, and there is no indication from the materials produced by Dr. Smith that he investigated interest rates available to either plaintiff, their financial wherewithal, outstanding debts, or any other factor which could be related to applicable interest rates.⁴

For these two plaintiffs there is no basis whatsoever for any loss – no suggestion is made that either attempted to borrow money nor any evidence presented that available interest rates were altered as a result of their Northern Leasing Systems contracts. Moreover, Dr. Smith's quantification of this purely conceptual loss lacks any justification and represents pure speculation.

In Mr. Lim's case Dr. Smith provides a passing reference to an actual loss resulting from a change of creditworthiness, noting that he attempted to refinance his mortgage in 2004 or 2005 and was turned down and that he had two credit card applications rejected.⁵ However, neither of these claims ultimately is related to the estimate of loss Dr. Smith provides, as he does not attempt to find

⁴ The fact that Dr. Smith applies these same 12 and 25 percent interest rates to Ms. Serin, Mr. Russ, Mr. Lim, and Mr. Redner would indicate that he chose these rates without regard to any individual financial circumstances.

⁵ The materials produced by Dr. Smith contain no information about refinancing attempts.

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the amount of additional mortgage interest Mr. Lim could have avoided through refinancing or discuss whether Mr. Lim possessed other credit cards at the time. Rather, Dr. Smith simply asserts that Mr. Lim had a credit capacity of at least \$200,000 and that "Mr. Lim had the ability to borrow considerable sums beyond her (sic) current lines of credit." As Dr. Smith has again provided no evidence that Mr. Lim attempted to borrow any part of this alleged \$200,000 or his method of determining the \$200,000, there is again no basis for any claim here. Moreover, he uses the same quantification method, relying upon an imagined 13 percent difference in interest rates without providing any basis for his figures.

Dr. Smith's treatment of Mr. Russ is similar to his treatment of Mr. Lim – he begins as if he will value an actual loss resulting from higher interest rates, mentioning a higher interest rate Mr. Russ was forced to accept, but then resorts to once more speculating a dollar figure which hypothetically could have been borrowed and applying his unsubstantiated 13 percent interest rate differential.⁶ For Mr. Russ this speculated figure is \$325,000, and consequently Mr. Russ is awarded a far larger loss of credit expectancy than the other plaintiffs. As with the other plaintiffs, Dr. Smith does not discuss the origin of this figure. This larger sum illustrates the illogic of Dr. Smith's approach. If there were a plaintiff with substantial assets, Dr. Smith would arrive at a large amount which could have been borrowed and large "losses" through use of his 13 percent interest rate differential, even though such a plaintiff could presumably use those assets to (a) avoid borrowing and (b) avoid any increase in interest rates.

Finally, for Thomas Smith, Dr. Smith does confine himself to an alleged actual loss rather than speculative hypothetical borrowing. Page three of the Smith report states that in May 2010 Thomas Smith was denied the opportunity to refinance his mortgage to 4.5 percent and was forced to retain a mortgage at 5.5 percent. The estimate of loss is then the additional payments which would have to be made at 5.5 percent instead of 4.5 percent over the 20 year remaining term of the mortgage.

While this is conceptually superior to the invented losses for the other four plaintiffs, Dr. Smith does not appear to have had sufficient information in his possession to make an accurate estimate of losses. No information is provided to show that Thomas Smith's credit, absent his

⁶ Dr. Smith's backup materials provide no information about higher interest rates Mr. Russ was forced to accept or for what rate he might have qualified.

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interaction with Northern Leasing Systems, would have been sufficient to obtain a mortgage at 4.5 percent.⁷ No information is provided on the term of this proposed 4.5 percent mortgage (shorter term mortgages carry lower interest rates). No information is provided whether either mortgage is fixed or adjustable rate. No information is provided on any subsequent attempts by Thomas Smith to obtain a mortgage at lower rates. Backup information provided by Dr. Smith contains no data either about Mr. Smith's current mortgage or the proposed mortgage. Finally, Dr. Smith extends his loss for 20 years into the future, which is inconsistent with an assumption, necessary for purposes of economic loss calculations, that Thomas Smith will prevail in this case. Should he prevail, his credit report will be presumably unaffected by Northern Leasing Systems and a competitive rate mortgage available to him, which would terminate the period of any loss.⁸ However, it is not possible to calculate a loss given the gaps in the information available.

I conclude that for plaintiffs other than Thomas Smith there is no basis for any calculation of loss, as Dr. Smith simply concocts a speculative amount of money which could have been borrowed and assigns loss based on an unsubstantiated interest rate differential without regard to the circumstances of any plaintiff or any actual attempt to borrow. For Thomas Smith there is an allegation made which could lead to a loss, but insufficient information is provided to reliably perform any calculation and Dr. Smith extends the loss far beyond what his assumptions would warrant.

III. LOST BUSINESS OPPORTUNITY

For Mr. Russ, Dr. Smith includes an additional category of loss resulting from a claimed loss of the opportunity to purchase three check-cashing locations. Dr. Smith writes that Mr. Russ claimed that two of these three stores would have provided a profit of \$72,000 per year and the third \$25,000 per year, and values the loss as this total of \$169,000 per year, growing at three percent per year, for Mr. Russ' life expectancy.

⁷ Dr. Smith makes reference to a 2002 credit report for Mr. Smith but does not discuss the relevance of this report to an attempt to refinance in 2010, nor does he refer to any information about Mr. Smith's credit closer to 2010.

⁸ Should interest rates increase, there could still be a loss into the future.

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There are a number of flaws which render this calculation meaningless even if it is assumed that Mr. Russ' interactions with Northern Leasing Systems, and only those interactions, prevented the purchase of these three stores. First, there is no evident attempt by Dr. Smith to evaluate Mr. Russ' claims regarding the profitability of these stores. Dr. Smith could have examined the profitability of Mr. Russ' existing check-cashing stores, his tax returns, information on the proposed stores which should have been made available to Mr. Russ as he contemplated purchase, or information on a store which Mr. Russ sold, as its sale price should have been a function of its profitability. I examined the information made available to Dr. Smith and saw nothing relevant to these stores (indeed, there was no mention of this potential transaction), and I am informed that defendant requested tax return information for Mr. Russ' existing businesses but it was not provided. In the absence of any information on the accuracy of Mr. Russ' estimates of profitability, it is not possible to assess them, and there is no indication that Dr. Smith did more than record what he was told by Mr. Russ. Without any basis for the profit figures, Dr. Smith's calculation represents pure speculation.

An additional terminal flaw with this estimate is that while it takes into account profits these stores allegedly would have made, it completely disregards what Mr. Russ would have had to pay to buy these stores. This is equivalent to assuming that the stores would have been given to Mr. Russ, which seems unlikely if they truly returned either \$72,000 or \$25,000 per year in profit. Any loss to Mr. Russ would consist of the difference between the presumed profit and the cost of obtaining the stores, not simply the former.

I conclude that there is insufficient information available to assess what loss, if any, Mr. Russ sustained because he did not purchase three check-cashing stores. No attempt is evident to show that Mr. Russ' dealings with Northern Leasing Systems prevented the purchase, no information was collected to verify Mr. Russ' claims of potential profits, and the methodology employed appears to assume that the stores would have been given to Mr. Russ.

IV. REDUCED VALUE OF LIFE

Dr. Smith's report also presents an estimate of what he styles as the dollar value of the reduction in each plaintiff's enjoyment of life resulting from their dealings with Northern Leasing

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Systems. Per Dr. Smith, this estimate is based on “many” economic studies on what individuals pay to preserve the ability to lead a normal life. As is discussed further below, while there are indeed many studies which discuss a concept called the value of a statistical life, Dr. Smith misinterprets this literature, a point which has been made by at least one author of a study cited by Dr. Smith. Moreover, Dr. Smith then compounds this error by applying to an average “value of life” obtained from a review of a series of economic studies an estimate of “the percent reduction in the ability to lead a normal life” which differs by plaintiff and appears to have no foundation. Needless to say, the choice of these arbitrary figures can lead to large swings in Dr. Smith’s value.

Dr. Smith cites various references to economic literature and claims that his methods for calculating “hedonic” damages are based on existing and generally accepted economic theories. They are not. While Dr. Smith does cite a number of studies which present estimates of the value of an anonymous, statistical, life, his sources contain nothing which presents an estimate of the value of the ability to lead a normal life or a percentage reduction in the same arising from participation in a contractual dispute. The “value of a statistical life,” as defined by economists and the only figure available from the studies cited by Dr. Smith, is not relevant for determining compensatory damages. Aside from the irrelevance of Dr. Smith’s sources, there is no basis in economics or the studies Dr. Smith relies upon for assuming that a percentage reduction in the ability to lead a normal life resulting from a contractual dispute corresponds to an identical percentage reduction in the value of a statistical life. Consequently, all presumed damage amounts in this category represent speculation.

A. The Economic Meaning of the “Value of Life”

One underlying problem with Dr. Smith’s entire approach is that he mischaracterizes the economic literature as presenting estimates of the value of being able to lead a normal life which he can then turn into a measure of damages through an arbitrary assumption of a percent reduction. While there are indeed numerous economic studies which discuss a concept called “the value of a statistical life,” sometimes abbreviated as “value of life,” this phrase is shorthand for a mathematical measure of the extrapolation of an amount of money that individuals would pay to avoid a small increase in life-threatening risks to a total value of life.

To understand what economists mean when we talk about the “value of life,” consider the following example. You are exposed to a toxic gas emanating from an industrial plant near your

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home. On average, out of 10,000 people who are exposed to this toxic gas, one will die each year while the other 9,999 people are unaffected. I have developed an antidote for the toxic gas. I sell a year's supply of the antidote for \$200 per person. If you spend \$200 for my antidote, economists would conclude that, being a rational individual, you must value your reduced exposure to risk by at least \$200. In other words, you would rather part with \$200 than be exposed to a one in 10,000 risk of death.⁹

Suppose 10,000 individuals are in the same position as you. On average, over the course of a year, one of these individuals would die if none took the antidote and none would die if all took the antidote. If each of the 10,000 individuals took the antidote, they would have paid me a total of \$200 per person \times 10,000 people = \$2,000,000. In total these 10,000 individuals would have spent \$2 million to avoid the risk of one death. The \$2 million expenditure in this example is the total amount of money that a group of individuals would pay in order to avoid the risk of one death among the group. There is no way for the group (or anyone else for that matter) to know whose life will be saved since any one of the group could have been struck down without the antidote. The life saved is an anonymous or "statistical" life, not an identifiable one. Moreover, the \$2 million "value of life" resulting from this instance derives entirely from the very small change in the risk of death from one in 10,000 to zero.

Economists refer to the \$2 million figure as the "value of a statistical life" or, even more briefly, as the "value of life." When economists use this expression we do not mean that the value of life is \$2 million. We do not mean any particular individual values his life at \$2 million. We do not mean that any group of individuals values the life of a member by \$2 million. We do mean that the total amount of money that a group of individuals will pay for a slight reduction in the risk of death to each member is \$2 million.

There is another meaning of the "value of life." Suppose that there is no antidote to the toxic gas in the example above but you have the choice of taking a job in which you will be exposed to the toxic gas. How much additional compensation would you demand to take a job in which you are exposed to the toxic gas than to take an otherwise similar job in which you are not exposed to the toxic gas? If you would take the riskier job only if it paid at least \$200 more a year,

⁹ Whether one is willing to part with the \$200 may well be a function of financial resources, which shows a flaw in extrapolating from small risks to a value of life. For such a small risk those with limited resources might

then economists would conclude that, being a rational individual, you value the one in 10,000 risk of dying at less than \$200. If 10,000 individuals would accept the riskier job for an additional \$200 a year, then economists would conclude that these individuals would be willing to accept one additional death, on average, for an additional \$2,000,000 in compensation. Here again, we say that the "value of a statistical life" or the "value of life" is \$2 million. But here "value of life" refers to the total amount of money that a group of individuals is willing to be paid in order to each member of the group "accepts" a very small increase in the probability of death.

The approach that I have just described for determining the amount of money that a group of individuals would pay to avoid the risk of death can also be used for determining the amount of money that a group of individuals would pay to avoid the risk of one injury. Suppose, in the example above, that the toxic gas caused emphysema rather than death in one out of 10,000 individuals exposed to the gas. Then an individual might be willing to pay \$50 to eliminate this risk. The "value of a statistical injury" would then be \$500,000 ($= \$50 \times 10,000$) since 10,000 like-minded individuals would each pay \$50 to avoid one random case of emphysema. As with the "value of a statistical life," the value of a "statistical injury" reflects no more than the amount of money that a group of individuals would pay for a slight reduction in the likelihood of injury.

In summary, what economists mean by the "value of life" is the amount of money that a group of individuals would pay in total for a slight reduction in the likelihood of death. Similarly, the "value of statistical injury" is the total amount a group would pay to slightly reduce the probability of injury. As stated by Thomas Schelling, a pioneer in the use of value-of-life estimates: "If an individual will pay annually ... \$100 to reduce some mortal risk to himself from 1:10,000 annually to 1:20,000 ..., it is convenient to say that he 'values his own' life at \$2 million. That sounds as if, confronted with certain death, he would come up with \$2 million to stay alive. But that is not what we mean, and it does not follow from the small-risk calculation."¹⁰ Yet Dr. Smith cites the economic literature as if it supported the notion that the value of an individual's life or his ability to lead a normal life can be extrapolated from these small changes in risk of death or injury.

choose not to purchase the antidote, which would lead to different values of life for different income levels, an odd conclusion if we are measuring the value of the ability to lead a normal life as Dr. Smith contends.

¹⁰ Thomas Schelling, "Value of Life," *The New Palgrave: A Dictionary of Economics*, New York: Macmillan, 1987, 793-796.

B. "Value of Life" Is Not Relevant for Calculating Compensatory Damages

The "value of life" was originally developed for, and has generally been applied to, assessing the costs and benefits of government investments in safety and environmental protection. Consider the toxic gas example we considered earlier. If there were no antidote available for the toxic gas, the government might want to consider investments in the development of an antidote or requiring the source of the toxic gas to install equipment to cleanse its emissions of toxic gas. Economists would recommend that the government undertake these investments only if the benefits from them exceed the costs. One measure of the benefits is the amount of money that the affected individuals would be willing to pay for the elimination of the risk. If it cost \$1 billion per year to eliminate the risk of one death out of 10,000, economists would argue against the investment since the benefits of the risk reduction is only \$2 million. If it cost \$1 million per year to eliminate the risk of one death out of 10,000, economists would argue for the investment.

While the "value of life" approach could lead to helpful figures for cost-benefit analysis of government investments in health and safety, it does not measure compensatory damages. The primary purpose of damages is to make the plaintiff whole--neither better off nor worse off than he would have been but for the injury. The "value of life" clearly does not measure the amount of money that we would have to give a plaintiff to make him whole; indeed the economic data from which such estimates are derived, as discussed above, are only amounts people would be willing to pay for a small decrease in the risk of death or injury.

One of the basic flaws in Dr. Smith's analysis is that he assumes that the value of life that is relevant for a group of individuals facing one random death is the same as the value of life for a single individual facing the certainty of death. In effect, Dr. Smith assumes that if an individual were willing to assume a 1 in 10,000 risk of death for \$200, he would be willing to assume a 2 in 10,000 risk of death for \$400, a 5,000 in 10,000 (or 1 in 2) risk of death for \$1,000,000 and a certainty of death—10,000 in 10,000—for \$2,000,000. This is hardly likely. While 10,000 individuals accept total compensation of \$2,000,000 to assume a slightly higher risk of death, there is no reason to believe that a single individual would accept \$2,000,000 to assume the certainty of death (or, indeed, that there is any such amount). The "value of life" derived from such data is therefore not a relevant concept for assessing compensatory damages.

C. Dr. Smith's Methodology and Economic Studies on Value of Life

Dr. Smith's use of the economic studies on value of life is improper for two major reasons. First, he incorrectly uses value-of-life estimates (that have to do with risk-money tradeoff involving small changes in risk) as a basis for calculating the compensation amount to make a person whole following a wrongful death or injury, physical or psychological. Second, he wrongly equates the value of risk reduction, or the value of life, and the value of the ability to lead a normal life.

However, contrary to Dr. Smith's methodology, there is no bridge linking the value-of-life literature as is commonly understood by economists and the value of the ability to lead a normal life as embraced by Dr. Smith. Consequently, his assertion that he is using a method that is generally accepted among economists is inaccurate.

1. Value of Life

Dr. Smith asserts that "peer review of the concepts and methodology have been extraordinarily extensive." But this statement is extremely misleading in that it suggests that *Dr. Smith's* methodology has been extensively peer reviewed. It is certainly true that the "value-of-life" literature is well-established within economics as described above in examining the compensation necessary to accept a small incremental risk. Dr. Smith's methodology, which attempts to transform the compensation necessary to accept a small incremental risk to the value of the ability to lead a normal life, is not. He mischaracterizes the literature by writing that his estimate is based on "what we, as a contemporary society, actually pay to preserve the ability to lead a normal life." In fact, the studies examine the amounts individuals are willing to pay to accept a small increase in a perceived risk of death.

The text of Dr. Smith's report (there is also an appendix) refers to only three studies: a review of existing studies written by Ted Miller in 1990 (discussed below), a 1975 paper by Thaler and Rosen, and a 2002 study by Kip Viscusi. Following the paragraph in which he cites these articles, Dr. Smith inserts a sentence about his methodology which begins "because it is generally accepted by economists." Again, the articles cited say nothing about the notion of attempting to measure compensatory damages or the ability to lead a normal life and it is certainly not generally accepted by economists that these articles or any others can provide such a measure. In fact, as noted below, Viscusi himself has written that the methodology used by Dr. Smith is inappropriate,

and the 2002 Viscusi article cited by Dr. Smith directly contradicts Dr. Smith's approach.

In an attempt to link his estimates to the peer-reviewed economics literature on value of life, Dr. Smith also adds an appendix citing others sources of various vintage from conventional economics journals. These articles do not address what Dr. Smith is advocating, but rather employ the incremental change in risk methodology discussed above to obtain an estimate of the value of an anonymous, statistical life.

Aside from citing studies of the value of a statistical life, Dr. Smith attempts to claim that his approach is generally accepted by citing textbooks, Nobel laureates, judicial scholars, and discourses on damages in wrongful death cases. However, none of these sources provides support for Dr. Smith.

In Nobel laureate Kenneth Arrow's article, a book review, the value of life is mentioned briefly in the context of benefit-cost analysis and compensation-risk tradeoff when the probability of death is not sufficiently high.¹¹ Compensatory damages and the ability to lead a normal life are not mentioned. Review of the Rand corporation study concerning damages in wrongful death cases reveals that (1) the authors conclude that there is no reliable way to accurately measure the value of life and call an approach relying on the value of life literature impractical and irrelevant and (2) they discard such an approach to finding such a loss from wrongful death in favor of measuring the pure economic loss. The Hamermesh and Rees book Dr. Smith cites mentions the "hedonic approach" to value a life not as part of the main body of the text but rather shown in a box with a heading "POLICY ISSUE." Although the hedonic approach is mentioned as an alternative way to value a life, Dr. Smith's methodology in particular is not mentioned and no opinion is given as to the desirability of following the hedonic approach. Nothing from this "policy issue" discussion suggests general acceptance in the economics community for the hedonic approach.¹²

Dr. Smith also cites articles published in the *Journal of Forensic Economics* as evidence of general acceptance of his methodology. One of the articles listed is Viscusi (1990), who opines, in direct rejection of Dr. Smith's methodology, which yields an identical value of life for all people,

¹¹ Kenneth Arrow, "Invaluable Goods," *Journal of Economic Literature*, Vol. 35, June 1997, 757-765.

¹² Dr. Smith also cites books by Richard Posner, but Justice Posner also wrote nothing about Dr. Smith's methodology and instead provided an overview of the notion of the value of a statistical life. Like Professor Viscusi, Justice Posner also cautions that one cannot assume that if an individual would accept a one in ten thousand risk of death for \$100, he would accept \$1 million for certain death.

"it makes no more sense to utilize a uniform value-of-life figure for all people than it does to assume that economic damages are the same for every wrongful death case." Moreover, Dr. Smith fails to mention many other articles arguing that hedonic damage estimates are inappropriate. Indeed, Viscusi published an article in the same journal in 2000 entitled "Misuses and Proper uses of Hedonic Value of Life in Legal Contexts" in which he specifically rejects the notion that hedonic damages as a damage concept are warranted.

As further evidence of general acceptance, Dr. Smith asserts that "this methodology is endorsed and employed by the U. S. Government as the standard and recommended approach for use by all U. S. Agencies in valuing life for policy purposes." However, "policy purposes" such as setting regulations is a far different use than setting compensation levels in individual lawsuits, as was noted by Viscusi, a frequent contributor to the U. S. Government and Agencies on policy issues involving the value of life. He states, in reference to wrongful death cases involving the government, that "in some instances plaintiffs' experts attempted to introduce that hedonic damages approach. However, in every instance the government opposed this methodology and instead chose to base damages on conventional measures, such as the present value of lost earnings. It is consequently incorrect to state, as some hedonic damages experts have done, that the adopting of hedonic values simply follows government practice."¹³

After citing this literature which does not discuss, let alone support, his methodology, Dr. Smith ultimately relies upon a single value of life estimate for which he provides no clear source, stating only that he uses a "late 1980s" study inflated to current day dollars. From Dr. Smith's text it appears likely that this study (and Dr. Smith's value of \$4.1 million) is by T. R. Miller, who claimed that the mean and median value of the value-of-life estimates from the 47 studies he reviewed was \$2.2 million in 1988 dollars.¹⁴ To arrive at this figure, Miller makes numerous ad hoc adjustments to estimates presented in the studies. These adjustments transform estimates from wage-risk studies ranging from \$0 to \$16 million into those ranging from \$1.1 million to \$3.0 million. The adjustments include dividing some values by three and multiplying some values by

¹³ Viscusi, 2000, p. 118. He also points out that there is no "government" value of a statistical life, as various agencies use various figures.

¹⁴ Ted Miller, "The Plausible Range for the Value of Life—Red Herrings Among the Mackerel," *Journal of Forensic Economics*, Vol. 3, No. 3, 1990, 17-39. I note that I have encountered Dr. Smith's hedonic damage calculations several times in the past ten years, and in each case Dr. Smith valued the plaintiff's life at exactly the same amount based on this Miller article. Per Dr. Smith, it would appear that there is no difference in value of life across individuals and all five plaintiffs here are assigned the same value.

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three, some values by 2.2, some values by 0.84, and some values by 35 percent. To make one of his adjustments, he divides estimates from some studies by three "with some misgivings." Miller himself uses terms such as "arbitrary" and "drastic" to describe his adjustments.

While Dr. Miller reports a mean or average value of \$2.2 million in 1988 dollars, reliance on this sole figure conceals the extreme variation among the 47 underlying figures and within the individual studies.¹⁵ Most of the labor-market studies have followed the basic methodology and approach presented in Professor W. Kip Viscusi's 1978 study of about 500 blue collar workers. In this study the equation that gave the highest estimate of the "value of a statistical life" was about \$5.7 million (in 1988 dollars) with a standard error of about \$1.7 million. Thus, the true "value of a statistical life" according to this estimated regression could be between \$2.2 million and \$9.2 million. At the lower end of the "value of a "statistical life" estimates, he found that the "value of a statistical life" was \$2.9 million (in 1988 dollars) with a standard error of \$2.2 million. Thus, the true "value of a statistical life" could lie between **negative** \$1.4 million and \$7.2 million. Therefore, this one study is consistent with values of life from approximately negative \$1.4 million to \$9.2 million. This is an astounding range and is typical of these studies; the number that Dr. Miller reports in the summary cited by Dr. Smith do not reflect these within study variations.

I believe, however, that Dr. Miller's single figure, repeated by Dr. Smith, understates the degree of uncertainty over the value of life estimates. First, each of the estimates he cites is itself measured with a great deal of uncertainty. Viscusi's study would accept estimates ranging from about negative \$1 million to \$9 million. The same is true for all of the other estimates cited by Dr. Miller. Second, many of the studies cited by Dr. Miller rely on very similar approaches and data. The majority of the labor-market studies he includes use the Bureau of Labor Statistics risk data. It is hardly surprising that these studies yield similar estimates. What is perhaps more surprising is that studies based on similar statistical methods and data yield such different results. Even after "unreliable" studies are eliminated, the "value of life" estimates reported by Dr. Miller are consistent with estimates of a few hundred thousand dollars to many millions of dollars. There is no scientific basis for choosing any particular number.

Professor Viscusi argued, in his 2000 article cited above, that mere variation in value of

¹⁵ Because a statistic is an average is no guarantee that it is reliable or meaningful. Consider a situation where three studies showed a value of life of \$1,000 and three other studies \$5 million. While one could average

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life estimates was not a sufficient basis to reject their utility for policy purposes, even though he rejects their use in wrongful death or injury cases such as this one. However, his argument is that one would not expect to obtain the same value of life from studies covering different populations of workers, or that variation in estimates should be expected because there is variation in the value of life among different people. Viscusi wrote in 2000 "it makes no more sense to utilize a uniform value-of-life figure for all people than it does to assume that economic damages are the same for every wrongful death case." In a 2004 study, Viscusi estimates separate values for a statistical life for blue collar and other workers and by gender, and finds large differences by occupation and gender. In one specification his estimate of the value of a statistical life is \$4.7 million for his entire sample, but is negative for women and far greater for blue-collar workers. Dr. Smith assumes a uniform value of life figure and offers no opinion on the extremely large variation in values of life within Dr. Miller's study, both before and after Miller's "adjustments."

2. Value of Leading a Normal Life

Dr. Smith takes his misguided use of the value-of-life estimates further away from the realm of generally accepted concept and methodology by equating value of life with the value of leading a normal life. However, according to Havrilesky, "Many economists without an interest in forensic applications would likely be aware of 'the value of life' as it relates to the literature on the valuation of the avoidance of the risk in cost-benefit analysis as developed by Mishan, Schelling and Viscusi. Nevertheless, they would not generally know of the attempt by a small number of forensic economists to apply these risk-based, anonymous-life values to an individual's enjoyment of his or her whole life. The reason for this is that there is no literature on this particular application beyond the forensic and law journals."¹⁶

Dr. Smith's use of the value-of-life literature is misguide and his methodology is not generally accepted by economists because "the discipline of economics provides no basis for a systematic positive relationship between the values of the avoidance of injury for statistically anonymous lives, on the one hand, and the value of an individual's enjoyment of life, on the other hand." Havrilesky presents an excellent example to illustrate this point:

these six studies, obtaining a figure of approximately \$2.5 million, the average is far from the value obtained from any study.

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As an example, consider a group of sports car enthusiasts whose preferences cause them to substitute adventure and beauty for safety in their auto purchases. As a result, they do not pay a premium to reduce the probability of death. According to hedonic valuation of group safety, the aggregate payment for safety by this group is zero. The application of 'hedonic damages' to the enjoyment of life would therefore come to the preposterous conclusion that the value of enjoyment of life of individual members of this group is non-positive.

Havrilesky is not alone in dismissing the link between the value-of-life estimates and the value of enjoyment of life. Viscusi says that "[t]he way in which these value-of-life estimates are often applied in the courtroom also reflects a misunderstanding of what these estimates mean" especially when it is coupled with a psychological scale to measure the individual's well being.¹⁷ He asks "Is a reduction in one's happiness score from 9 to 4.5 really equivalent to facing a 50/50 chance of death?" and answers "The value-of-life linkage derives from a lottery on life and death, not a score on any happiness scale or psychological rating approach. The methodologies are completely mismatched."¹⁸

Here, Dr. Smith does not use a happiness scale, but the criticisms above directly apply. In this case Dr. Smith assumes an "impairment rating" by the trier of fact which varies for the five plaintiffs. Ms. Serin's impairment is presumed to be 30-50 percent, that of Mr. Smith 40-60, Mr. Redner 33.33-50, Mr. Russ 40-80, and Mr. Lim 40-60.¹⁹ No basis is given for any of these figures, and it certainly falls outside the purview of an economist to divine a percentage impairment based on a contractual dispute. Nonetheless, these figures are central to Dr. Smith's calculations, as he multiplies them by his presumed value of the ability to lead a normal life to yield damages.

Dr. Smith's methodology, then, requires the reader to accept that valuations of "life" obtained from such information as additional wages required to accept a small incremental risk of death are plausible measures of compensatory damages and that a presumed "impairment" can be measured as a fixed percentage of that amount. Far from being the mainstream practice Dr. Smith

¹⁶ Thomas Havrilesky, "The Persistent Misapplication of the 'Hedonic Damages' Concept to Wrongful Death and Personal Injury Litigation," *Journal of Forensic Economics*, Vol. 8, No. 1, 1995, 49-54.

¹⁷ Viscusi, 2000, p. 118.

¹⁸ Viscusi, 2000, p. 119.

¹⁹ Dr. Smith assumes that these impairments will decline once litigation with Northern Leasing Systems ended, leaving all but Mr. Smith with 5-10 percent impairments and Mr. Smith 10-20. These impairments are assumed to last for life.

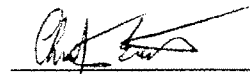
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describes, there is no support (and in cases such as Viscusi, outright rejection) for such a methodology in the conventional economics literature and it represents speculation.

D. Conclusions on the "Value of Life"

Dr. Smith's attempt to provide a figure for the plaintiffs' lost value of the ability to lead a normal life as a result of their disputes with Northern Leasing Systems fails for a variety of reasons. First, Dr. Smith misapplies the conventional economic literature which examines compensation required for small increases in the likelihood of death by claiming that it can be used as the basis for anyone's value of life. Second, he appears to use one figure from the Miller study without regard to the extreme variation in the underlying studies or Miller's admitted drastic adjustments and without discussion of why one should credit the average of many disparate numbers as a relevant figure. Third, Dr. Smith's one-value-fits-all approach has no support and stands in contrast to published work. Fourth, Dr. Smith offers no justification for his methodology of assuming that one can take published value of a statistical life estimates derived from examination of tradeoffs of probability of death, and somehow translate it proportionately to the effect of a contractual dispute injury on the ability to lead a normal life. Fifth, Dr. Smith's invention of "impairment ratings" is unsupported and open to manipulation to yield almost any amount of loss up to the presumed "value of life."

Consequently, Dr. Smith's approach, which is contrary to accepted practice in economics and relies on a misuse of the literature, should be rejected.



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October 18, 2010

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